

Science

Through play, I have explored a variety of ways of making sounds. SCN 0-11a
I can identify my senses and use them to explore the world around me. SCN 0-12a

- Explore the variety of sounds in the environment by going on a '**listening walk**'. Go for a walk in the school grounds and/or in the local environment to find out what you can hear outside: Ask: *Where are the sounds coming from? Why are the sounds quiet/loud? How do we hear sounds?* The children could draw what they hear on their walk e.g., bird, cars, people, etc and explain their drawing to their peers/teacher back in class or make a map of their sound walk. Or use an iPad and take photographs or record the sound scape; these could be used for discussion back in the classroom. Ask the children is it a loud or quiet sound? How can they tell how far away the object making the sound is?
- If you have a chance, as part of the walk, drop a pebble in a pond/puddle or watch water dripping into a puddle, it is a useful image to explain how sound waves (the movements/vibrations) radiate from the source getting fainter the further they are from the source
- Use natural materials to explore and create sounds; experiment with using different materials in order to make different sounds.
- Make owl sounds: Cup your hands together and bend your thumbs slightly to create a mouthpiece – blow steadily.
- Make peacock sounds: Stretch a blade of grass between your thumbs, clasp your fingers together and blow steadily.
- Rain Drums: If you have very heavy rain, make a rain band! Grab some yoghurt pots Or jars and put wax paper over the top with an elastic band. See what noises the rain makes bouncing off the top of your drums.

Technology

I enjoy taking photographs or recording sound and images to represent my experiences and the world around me. TCH 0-04b

- Use technology to take pictures of things that make sounds or make recordings of sounds in the environment.

Outdoor Learning: Sound & Light Early Level

Engineering

Through discovery, natural curiosity and imagination, I explore ways to construct models or solve problems. TCH 0-14a

- Use natural materials to create musical instruments and experiment with ways to make different sounds e.g., shaking, hitting, plucking etc.

Maths

I can collect objects and ask questions to gather information, organising and displaying my findings in different ways. MNU 0-20a

I can match objects, and sort using my own and others' criteria, sharing my ideas with others. MNU 0-20b

- Children could take part in a sorting activity using the pictures they drew or photographs they took relating to sound on a '**listening walk**'. They could discuss the pictures/sounds and sort into groups: e.g., loud or soft, high or low pitched, made by something living or made by something non-living etc.

Suggestions for Outdoor Learning: Sound and Light

Science

*By collaborating in experiments on different ways of producing sound from vibrations, I can demonstrate how to change the pitch of the sound. **SCN 1-11a***

- Water bottle shaker – add small stones, twigs, shells etc to the bottle. One empty and dry plastic water bottle. Seal and shake. How does the sound of a fuller bottle compare to an emptier one? Why? Try different materials inside and different amounts in the bottle! Sounds all start with vibrations. Try to feel the vibrations: hold the bottle in the middle while shaking. Can you feel the e.g., stones hitting the side?
- The sound of rain: experiment with the variety of sounds that rain can make by putting different sorts of bowls on top of your head and listen to the raindrops landing. Which bowls make the loudest and softest sound? Compare this to the sound of a rainstick? Think about whether all rain sounds the same.
- [Garden Xylophone for Kids Outdoor Activity-CraftCreateCalm \(themomentsathome.com\)](https://www.themomentsathome.com)
Make a recycled jar xylophone and investigate what kinds of sounds you can create: a jar full of mud will make a different sound to a jar full of leaves!
- Make a wind chime: Collect natural items from outside, maybe while you are on a walk: pinecones, leaves and sticks all work well. Tie them to a large stick using string or wool so that they all hang at similar heights. Now make one with manmade items such as keys, beads or small bells. Hang the wind chimes outside and listen to the noise. What do you notice? What different sounds do you hear from the wind chimes? Which chimes make the loudest or quietest sounds? Which chimes sound high pitched and which sound low pitched?

Technology

*I can demonstrate a range of basic problem solving skills by building simple programs to carry out a given task, using an appropriate language. **TCH 1-15a***

*I can explore and experiment with digital technologies and can use what I learn to support and enhance my learning in different contexts. **TCH 1-01a***

- Measuring sounds: Use a micro:bit as a sound meter to look at how loud different sounds are. How noisy is the road or playground at different times of the day? When is it at its loudest or quietest? Take the device around the schoolgrounds and/or local area and see which parts are the quietest and loudest.
<https://microbit.org/projects/make-it-code-it/sound-meter/>
<https://microbit.org/projects/make-it-code-it/sound-logger/>
- Investigate how sound is affected by the distance it travels: the sound source will stay in the same place in the playground; record the sound at 2, 4, 8, and 10 meters moving away from the sound source. Using the Measure app on the iPad, measure the distance away from the sound source, then use the Sound Meter app and record the level of sound in db.

Outdoor Learning: Sound & Light First Level

Engineering

*I can design and construct models and explain my solutions. **TCH 1-09a***

- [Go Wild at Home: How to make a stick rattle - YouTube](https://www.youtube.com/watch?v=...): make some music with your very own stick rattle made using a few simple materials

Maths

*Using technology and other methods, I can display data simply, clearly and accurately by creating tables, charts and diagrams, using simple labelling and scale. **MTH 1-21a***

*I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology. **MTH 2-21a***

*I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the results in an appropriate way. **MNU 2-20b***

- Investigate how sound is affected by the distance it travels: use the information recorded using the iPad (see above) and put it into a Numbers document or Excel or Sheets doc and create a graph or create a graph on paper.

Suggestions for Outdoor Learning: Sound and Light

Science

Through research on how animals communicate, I can explain how sound vibrations are carried by waves through air, water and other media. **SCN 2-11a**

- Does the design, size and shape of ears matter? Animals ears are cone shaped to help them collect sounds and hear quieter sounds and sounds from further away. Create different cones and investigate which one helped you to hear. The sound source will stay in the same place in the playground; choose a distance of 2m, 5m and 10m to stand away from the sound source, test the different cones by listening to the noise. Which cone made the noise louder and why do you think it was the most effective? . What happens if you change the position of the cones on your head?
- Use your best design to go on a noise detection quest. How many different sounds can you detect? Can you locate where they come from?
- Make string telephones. What happens to the vibrations if you shout or whisper? Can you find a way of using the string telephone around a corner? What happens if you try to add another 'phone'? What happens if you use different types of string?

Technology

I can explore and experiment with digital technologies and can use what I learn to support and enhance my learning in different contexts. **TCH 1-01a**

I can extend and enhance my knowledge of digital technologies to collect, analyse ideas, relevant information and organise these in an appropriate way. **TCH 2-01a**

- Using the Measure app on the iPad, measure the distance away from the sound source,

Outdoor

Learning:

Sound

Second Level

Engineering

Maths

I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems. **MNU 2-11b**

- Opportunities for measurement e.g., distance from sound source

Note: **'Growing Music'** is an IDL project involving aspects of Science, Technology and Music. It engages children in a cycle of planting, growing and investigating bamboo and making and playing pan pipes from bamboo canes. <https://pstt.org.uk/resources/growing-music/>

Suggestions for Outdoor Learning: Sound and Light

Science

*By exploring reflections, the formation of shadows and the mixing of coloured lights, I can use my knowledge of the properties of light to show how it can be used in a creative way. **SCN 2-11b***

- Investigating shadows:
The shape of an object determines the shape of its shadow: on a sunny day, look at shadows made by objects. Observe if the objects and shadows touch and the point at which they touch. An object is always between a light source and the surface on which its shadow forms: ask the children to consider the position of their shadow and the position of the Sun. Ask them to stand in the shadow of a building or other large structure. Discuss why they do or do not cast a shadow. Experiment with areas of dark shade (close to a building) and light shade (dappled sunlight due to vegetation or when a cloud obscures the Sun).
- Make a sundial: <https://explorify.uk/en/activities/problem-solvers/build-a-sundial>
[Human Sundial Shadow Science Experiments - Rhythms of Play](#)
- [Outdoor Lessons | Shadow Art | Learning through Landscapes \(ltl.org.uk\)](#)
- Perform shadow puppet displays. What different shapes/images can the children make using their hands and different objects? How can they make their shadows bigger and smaller?
- Make your own rainbow [making-rainbows.pdf \(ltl.org.uk\)](#) How can you make the biggest/brightest rainbow? Does changing the angle of your mirror or the height of the water make a difference? Can they think of any other ways to make rainbows?
- Blow bubbles in the playground and use them like a lens. Observe the colours of the rainbow on the surfaces of the bubbles.

Technology

*I can extend and enhance my knowledge of digital technologies to collect, analyse ideas, relevant information and organise these in an appropriate way. **TCH 2-01a***

*I can create, develop and evaluate computing solutions in response to a design challenge **TCH 2-15a***

- A shadow is the relative absence of light: investigate shadows in bright sunlight and in shady spots. Discuss the relationship between the intensity of the light source and the darkness or lightness of the shadow. Investigate changes to the intensity of shadows by photographing the shadow of an object at the same time each day for several days. Note whether it is sunny, medium cloud or heavy cloud cover. Compare the shadows in the photos. Are some lighter or darker than others? Ask why we need to take the photos at the same time each day?
- Use time lapse photography to record the changes in a shadow through the day to see the changes in the size and shape
- Test sunglasses: investigate a selection of sunglasses to find out which are the best for blocking light and use a light sensor attached to a datalogger/ on an iPad to take measurements of how much light passes through each pair of sunglasses. Devise a ranking system and present the collected data in different ways.
- <https://microbit.org/projects/make-it-code-it/sunlight-sensor/?editor=makecode> and investigate the amount of light in different areas of the playground.

Outdoor Learning: Light

Second Level

Engineering

*I can extend and enhance my design skills to solve problems and can construct models. **TCH 2-09a***

TCH 2-09a

*I can recognise basic properties and uses for a variety of materials and can discuss which ones are most suitable for a given task. **TCH 2-10a***

- Make shadow frames including using some natural materials and investigate which objects are transparent, opaque and translucent. Investigate how to make the shadow bigger and smaller <https://www.science-sparks.com/easy-shadow-frame/>

Maths

*I have carried out investigations and surveys, devising and using a variety of methods to gather information and have worked with others to collate, organise and communicate the in an appropriate way. **MNU 2-20b***

*I can use the common units of measure, convert between related units of the metric system and carry out calculations when solving problems. **MNU 2-11b***

- Opportunities for measurement e.g., shadow investigations and data collection e.g., sunglasses investigation, amount of light recorded in different areas of the playground etc.

Suggestions for Outdoor Learning: Sound and Light